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Estimates of the Population of Virginia Counties and Cities: July 1, 1981 (Final), and July 1, 1982 (Provisional)

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The population estimates contained in this publication were developed in cooperation with the United States Bureau of the Census under the auspices of the Federal-State Cooperative Program for Population Estimates. Three tables are included. Table 1 contains provisional 1982 estimates, 1980 census counts, and 1980-82 components of change by state for the South Atlantic Division, of which Virginia is a part. Table 2 contains provisional 1982 estimates, final 1981 estimates, and Census counts for each of Virginia's 136 counties and independent cities, 22 planning districts, and eight Metropolitan Statistical Areas (MSA's). Totals for counties, cities, metropolitan versus nonmetropolitan areas, and the state as a whole are given at the end of this table. Table 3 contains estimates of 1980-81 and 1980-82 change and net migration for the same areas. Following the tables, Appendix A lists the full names and constituent localities of the MSA's. Appendix B briefly describes the methods used to generate the estimates and the difference between provisional and final estimates.

In using these estimates, the reader should be aware of several points. First, except for 1980 Census population, all figures in Table 1 are rounded to the nearest thousand, and all estimated figures in Tables 2 and 3 are rounded to the nearest hundred. However, the underlying calculations were based on unrounded figures. Therefore, the sum of the estimates for constituent areas will often not be exactly the same as the sum for the combined areas. Second, in June, 1983 several changes were made in both the titles and constituent areas of Virginia's MSA's. In order to provide continuity throughout the decade, these changes are reflected in this publication. MSA totals therefore are presented for each of the eight new MSA's rather than for the 10 Standard Metropolitan Statistical Areas present in 1980, and each total reflects the sum of the metropolitan jurisdictions assigned to the MSA as of June, 1983. Further, two of the MSA's, Bristol and Northern Virginia, are portions of metropolitan areas that cross state boundaries. The estimates pertain only to the Virginia portion of these areas. Third, Census counts are adjusted for all post-Census annexations and boundary changes. The number by which each count was adjusted and other specific information about the changes are included in "Boundary Changes and Annexations." Finally, it cannot be overemphasized that the numbers presented in this publication are estimates. When the present ratio-correlation equation was used to generate 1980 estimates, and the results were compared with the 1980 census, the average absolute error was 4.4 percent.

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While we believe that the estimates are as accurate as we can make them, we continue to work with the Bureau of the Census and others in the field to improve both the methodology and the quality of the input data. In the meantime, it should be kept clearly in mind that no estimate is free of error.

POPULATION CHANGE IN VIRGINIA, 1980-1982

Virginia and the South Atlantic Division

Table 1 shows 1980-82 change and net migration for the states in the South Atlantic Division, of which Virginia is a part. Between these two dates, the Division as a whole is estimated to have grown by about 1,300,000 persons, a growth rate of about 3.6 percent. Within the Division, growth rates ranged from a loss of about 0.8 percent in the District of Columbia to a gain of almost eight percent in Florida, with Virginia ranking fourth out of the nine states.

Well over half of the net migration into the South Atlantic Division is accounted for by Florida. In fact, the majority of the nine states--Delaware, the District of Columbia, Maryland, South Carolina, and West Virginia--had net outmigration. Among the four states which had positive net migration rates, Florida ranked first, Georgia second, with Virginia and North Carolina ranking third. Largely because Florida's growth and net migration rates were so high, Virginia's rates were somewhat below those for the Division as a whole in both cases.

Although it is not shown in Table 1, estimated natural increase can easily be derived by subtracting net migration from total change. These figures indicate that among the states which were estimated to have net outmigration, most had rates of natural increase that were sufficiently high to offset these losses and produce positive rates of growth. Of the nine states, in fact, only Florida had more inmigration than natural increase. In general, this trend is due to the presence of more women of childbearing age than to any tendency toward larger families. For Virginia, where estimated 1980-82 growth was made up of about 49,000 net migrants and 83,000 persons gained through natural increase, this represents a trend quite different from that of the past decade, when natural increase and net migration were about equally responsible for population change.

Metropolitan Statistical Areas in Virginia

Between 1980 and 1982 Virginia gained about 132,400 people, for a growth rate of about 2.5 percent. Continuing a trend established during the decade of the 1970's, counties grew faster than cities. However, between 1980 and 1982 metropolitan areas grew at a faster rate than nonmetropolitan areas, reversing the 1970-80 trend. This is partly the result of changes in the makeup of the Metropolitan Statistical Areas, since some slow- or no-growth counties, such as Craig and Appomattox, are no longer included, and one high growth county--Stafford--has been added. It is also partly the result of continuing growth in suburban counties. For example, Chesterfield, Fairfax, Prince William, Gloucester, and Stafford Counties all had 1980-82 growth rates of over seven percent. However, it is also true that some metropolitan cities which had net

decreases in population between 1970 and 1980 are beginning to show a tendency toward population growth. Among these cities are Alexandria, Charlottesville, Hopewell, and Portsmouth. In addition, other metropolitan cities which experienced population decrease during the 1970's are still declining, but in some cases the rate of decline appears to be slowing. Norfolk, which lost only an estimated 100 persons between 1980 and 1982 is an example.

Two mechanisms, natural increase and net migration, are involved in producing population change. If we examine these mechanisms for metropolitan areas we find an important difference between counties and cities. Estimated components of change presented in Table 3 indicate that positive net migration accounted for a substantial proportion of the population growth in metropolitan counties. In the cities, however, 1980-82 net migration rates tend to be negative. This is true even in the cities which gained population, indicating that while the migration trend is still outward from these cities, they are recouping some or all of their population losses through natural increase.

Finally, it should be noted that not all metropolitan areas are experiencing high growth rates. Only two of the eight MSA's, the Northern Virginia portion of the Washington, D.C. MSA and the Norfolk-Virginia Beach-Newport News MSA had growth rates higher than that of the entire state. The Richmond-Petersrburg and Charlottesville MSA's had slightly lower rates. The Roanoke and Lynchburg areas, as well as the Bristol portion of the Kingsport-Johnson City-Bristol MSA, had growth rates under one percent, while the Danville area showed a small overall loss. Only two metropolitan areas are estimated to have had higher net migration rates than the state as a whole, while two--Danville and Lynchburg--experienced net outmigration.

Regions of the State

As Figure 1 indicates, population growth in Virginia exhibits a regional pattern, in which the northern, central, and eastern parts of the state are estimated to be growing more rapidly than the western and southern parts. Roughly speaking, the provisional 1982 estimates indicate that there are four major growth areas in the state. The Northern Virginia area extends from the northern border down to Stafford, where it is contiguous with the Central Virginia area. This area contains the Charlottesville and Richmond-Petersburg MSA's and some of their contiguous counties and cities. Together, these two high-growth areas contain almost half of the localities in the state with growth rates of two percent or higher. The remaining two growth areas are centered around Tidewater and the Peninsula, and contain 13 localities. This produces a pattern which is so highly regionalized that only five of the total of 35 areas with growth rates of two percent or more are located outside the major growth areas.

Among the counties outside of these areas, a considerable number are estimated to have lost population between 1980 and 1982. Since between 1970 and 1980 only three of the counties in this area lost population, these losses indicate change from a trend of slow growth to a trend of population decrease, particularly in the West Virginia border and south-central areas of the state. At the same time, the Valley and southwest areas continue the 1970-80 pattern of relatively small gains.

In many of the areas in which population is estimated to have declined, the loss is due to net outmigration and would have been larger if it had not been partially offset by positive natural increase. For example, Halifax County shows a net loss of about 700 people between 1980 and 1982, with a net outmigration of 900, indicating that it gained about 200 persons from natural increase. This movement is part of a decades-long trend toward migration to the more urban parts of the state, a trend that was clearly in evidence during the 1970's. It may well have been accelerated by the high unemployment rates in these areas during 1980-82. For example, the average March 1982 unemployment rate for the counties and cities of the West Virginia border area, from Highland south to Giles, was 13.1 percent, compared with an average rate five points lower for the high-growth area of Charlottesville City and Albemarle, Greene, Orange, and Louisa Counties.[1] If economic conditions in the declining counties were to improve, we might well see a return to a pattern closer to the slow growth evidenced during the 1970's.

Summary

Between 1980 and 1982 Virginia's population is estimated to have grown by about 132,000 persons, producing a growth rate of 2.5 percent. About 49,000 of these are estimated to be net inmigrants. Both the overall growth rate and the net migration rate of just under one percent are somewhat lower than the rates for the South Atlantic Division as a whole. The increasing importance of natural increase relative to net migration in producing population growth is a new trend for Virginia, more similar to the trends of the 1950's and 1960's than to that of the past decade.

Within the state, population growth is a matter of regions, with four major growth areas accounting for a large proportion of the State's overall 1980-82 growth. During this period, metropolitan areas are estimated to have grown faster than nonmetropolitan areas, reversing the trend of the previous decade. This was probably due to several factors, including changes in the composition of MSA's, inmigration to suburban counties, and increased rates of natural increase in metropolitan cities. In addition, the trend was accentuated by population losses in a large number of rural counties lying outside the major growth areas. In the future, the move to the suburbs, which is part of a long-established national trend, is likely to continue. The number of births is also likely to increase somewhat. This trend is expected not because the size of families is growing, but because the large numbers of women born during the baby boom of the 1950's and early 1960's are now in the process of becoming mothers themselves. However, it is possible that changes in the general economic picture of the state, and improvements in the employment outlook in particular, might work to produce a change in migration trends, slowing or reversing the population declines taking place in many of the western and south-central rural counties.

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[1]Based on "Population and Labor Force Data, March 1982," Prepared by the Division of Research and Analysis, Virginia Employment Commission, July, 1983.

Figure 1.
Population Change in Virginia Localities, 1980 - 1982

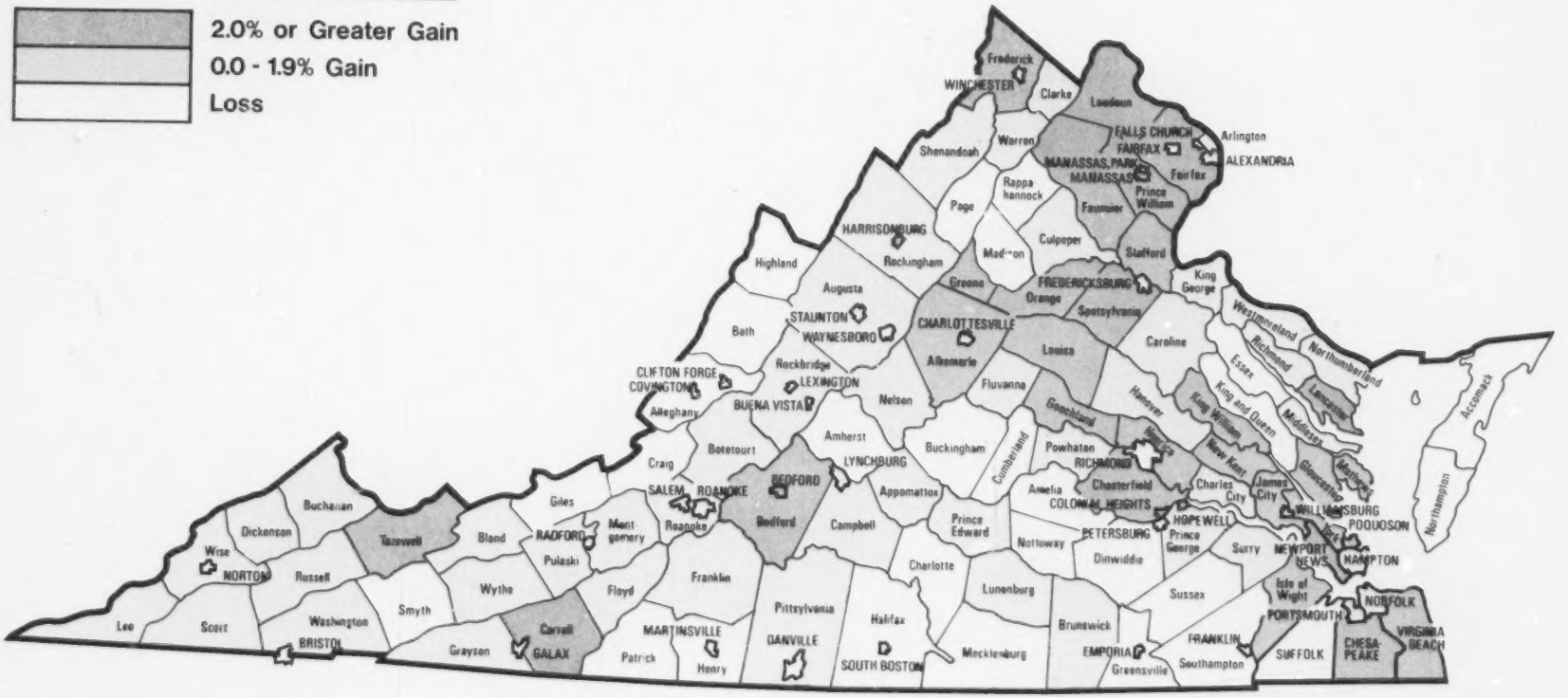

Table 1. 1982 ESTIMATES AND COMPONENTS OF CHANGE FOR THE SOUTH ATLANTIC DIVISION

State	1982 Estimate (Provisional)	1980 Census	1980-82 Change		1980-82 Net Migration	
			Numeric	Percent	Numeric	Percent
Delaware	600	594	6	0.9	-4	-0.6
District of Columbia	633	638	-5	-0.8	-10	-1.6
Florida	10,485	9,746	739	7.6	670	6.9
Georgia	5,642	5,463	179	3.3	74	1.4
Maryland	4,269	4,217	52	1.2	-9	-0.2
North Carolina	6,016	5,882	134	2.3	54	0.9
South Carolina	3,213	3,122	91	2.9	-29	-0.9
Virginia	5,479	5,347	132	2.5	49	0.9
West Virginia	1,957	1,950	8	0.4	-14	-0.7
South Atlantic Division	38,295	36,959	1,336	3.6	782	2.1

Based on unpublished data, U.S. Bureau of the Census, 1983.

BOUNDARY CHANGES AND ANNEXATIONS, 1980-1982

The list below details all boundary changes and annexations between counties and independent cities that have occurred between 1980 and 1982. Four items are listed for each such change: (1) the localities involved; (2) the legally effective date of the change; (3) the estimated population involved on that date; and (4) the estimated population in the transferred area on the Census date, April 1, 1980. The first three items are obtained from the Decree of Annexation; the fourth is provided by the Bureau of the Census. In Tables 2 and 3, all Census counts and estimates are adjusted for boundary changes and annexations.

1. From Fairfax County to Fairfax City
   Effective date: December 31, 1980
   Estimated population transferred: 1,093
   Estimated equivalent Census population: 1,147

2. From Montgomery County to Radford City
   Effective date: December 31, 1980
   Estimated population transferred: 272
   Estimated equivalent Census population: 232

3. From Rockingham County to Harrisonburg City
   Effective date: December 31, 1982
   Estimated population transferred: 4,702
   Estimated equivalent Census population: 4,970

TABLE 2. POPULATION ESTIMATES FOR VIRGINIA LOCALITIES, 1981-1982

Locality	1982 (Provisional)	1981	1980 Census
COUNTIES			
Accomack	31,000	31,000	31,268
Albemarle	57,500	56,500	55,783
Alleghany	13,800	14,200	14,333
Amelia	8,200	8,300	8,405
Amherst	29,100	29,100	29,122
Appomattox	12,100	12,000	11,971
Arlington	152,900	152,900	152,599
Augusta	53,700	54,100	53,732
Bath	5,200	5,400	5,860
Bedford	36,300	35,700	34,927
Bland	6,500	6,500	6,349
Botetourt	23,500	23,600	23,270
Brunswick	15,700	15,500	15,632
Buchanan	38,200	38,000	37,989
Buckingham	11,500	11,800	11,751
Campbell	45,900	45,700	45,424
Caroline	18,200	17,900	17,904
Carroll	27,900	27,400	27,270
Charles City	6,700	6,700	6,692
Charlotte	12,000	12,100	12,266
Chesterfield	152,200	148,700	141,372
Clarke	10,000	9,900	9,965
Craig	3,900	3,900	3,948
Culpeper	22,800	22,800	22,620
Cumberland	7,800	7,900	7,881
Dickenson	20,100	19,900	19,806
Dinwiddie	22,000	22,400	22,602
Essex	8,800	8,800	8,864
Fairfax	637,900	618,600	595,754
Fauquier	37,400	36,600	35,889
Floyd	11,700	11,800	11,563
Fluvanna	10,300	10,300	10,244
Franklin	36,000	35,900	35,740
Frederick	34,800	34,400	34,150
Giles	17,700	17,800	17,810

Table 2, continued

Locality	1982 (Provisional)	1981	1980 Census
Gloucester	22,000	21,000	20,107
Goochland	12,100	11,900	11,761
Grayson	16,700	16,700	16,579
Greene	8,000	7,800	7,625
Greensville	10,800	11,000	10,903
Halifax	29,900	30,300	30,599
Hanover	51,200	51,100	50,398
Henrico	185,800	184,000	180,735
Henry	56,400	57,100	57,654
Highland	2,700	2,700	2,937
Isle of Wight	22,100	22,000	21,603
James City	24,300	23,700	22,763
King and Queen	5,800	5,900	5,968
King George	10,700	10,600	10,543
King William	9,600	9,500	9,334
Lancaster	10,300	10,200	10,129
Lee	26,400	26,200	25,956
Loudoun	59,200	58,400	57,427
Louisa	18,200	18,000	17,825
Lunenburg	12,100	12,200	12,124
Madison	10,100	10,200	10,232
Mathews	8,300	8,100	7,995
Mecklenburg	29,100	29,100	29,444
Middlesex	7,800	7,800	7,719
Montgomery	64,300	64,200	63,285
Nelson	12,300	12,300	12,204
New Kent	9,200	9,000	8,781
Northampton	14,300	14,500	14,625
Northumberland	9,900	9,900	9,828
Nottoway	14,400	14,500	14,666
Orange	18,500	18,200	18,063
Page	19,300	19,300	19,401
Patrick	17,500	17,500	17,647
Pittsylvnia	66,400	66,400	66,147
Powhatan	13,100	13,100	13,062
Prince Edward	16,700	16,800	16,456
Prince George	25,900	26,700	25,733
Prince William	156,700	152,300	144,703
Pulaski	35,300	35,300	35,229
Rappahannock	5,900	6,000	6,093

Table 2, continued

Locality	1982 (Provisional)	1981	1980 Census
Richmond	7,000	6,900	6,952
Roanoke	73,800	73,900	72,945
Rockbridge	18,000	18,000	17,911
Rockingham	53,000	52,900	52,054
Russell	32,400	32,000	31,761
Scott	25,400	25,000	25,068
Shenandoah	27,700	27,700	27,359
Smyth	33,200	33,400	33,366
Southampton	18,600	18,600	18,731
Spotsylvania	36,100	35,700	34,435
Stafford	43,900	42,100	40,470
Surry	6,100	6,100	6,046
Sussex	10,500	10,700	10,874
Tazewell	51,600	51,000	50,511
Warren	21,400	21,500	21,200
Washington	46,900	46,900	46,487
Westmoreland	14,000	14,100	14,041
Wise	44,500	44,000	43,863
Wythe	25,600	25,600	25,522
York	36,800	36,400	35,463
CITIES			
Alexandria	104,300	105,200	103,217
Bedford	6,300	6,200	5,991
Bristol	18,800	18,700	19,042
Buena Vista	6,600	6,600	6,717
Charlottesvile	40,300	40,300	39,916
*Chesapeake	119,700	116,900	114,486
Clifton Forge	4,800	4,900	5,046
Colonial Heights	17,100	16,800	16,509
Covington	8,400	8,700	9,063
Danville	44,800	45,400	45,642
Emporia	4,900	4,900	4,840
Fairfax	20,400	20,700	20,537
Falls Church	9,400	9,500	9,515
Franklin	7,000	7,100	7,308
Fredericksburg	15,500	15,500	15,322

Table 2, continued

Locality	1982 (Provisional)	1981	1980 Census
Galax	6,500	6,600	6,524
Hampton	125,000	123,700	122,617
Harrisonburg	25,300	25,200	24,655
Hopewell	24,000	23,800	23,397
Lexington	7,100	7,100	7,292
Lynchburg	67,300	67,200	66,743
Manassas	17,100	16,600	15,438
Manassas Park	6,600	6,500	6,524
Martinsville	18,100	18,200	18,149
Newport News	151,200	147,800	144,903
Norfolk	266,900	273,000	266,979
Norton	4,600	4,600	4,757
Petersburg	40,200	40,400	41,055
Poquoson	9,500	9,100	8,726
Portsmouth	105,800	104,400	104,577
Radford	13,200	13,500	13,456
Richmond	218,200	218,100	219,214
Roanoke	100,200	100,200	100,220
Salem	24,000	23,900	23,958
South Boston	7,100	7,100	7,093
Staunton	22,000	21,900	21,857
Suffolk	47,500	47,200	47,621
Virginia Beach	282,600	273,600	262,199
Waynesboro	15,100	15,200	15,329
Williamsburg	10,100	10,100	9,870
Winchester	20,300	20,300	20,217

Table 2, continued

Locality	1982 (Provisional)	1981	1980 Census
PLANNING DISTRICTS			
1 LENOWISCO	100,700	99,800	99,644
2 Cumberland Plateau	142,200	140,900	140,067
3 Mount Rogers	182,100	181,800	181,139
4 New River Valley	142,400	142,500	141,343
5 Fifth	252,400	253,300	252,783
6 Central Shenandoah	208,700	209,200	208,344
7 Lord Fairfax	133,600	133,100	132,492
8 Northern Virginia	1,164,300	1,140,700	1,105,714
9 Rappahannock-Rapidan	94,800	93,800	92,897
10 Thomas Jefferson	146,600	145,200	143,597
11 Central Virginia	196,800	196,000	194,178
12 West Piedmont	239,200	240,500	240,979
13 Southside	81,800	81,900	82,768
14 Piedmont	82,900	83,500	83,549
15 Richmond Regional	648,600	642,600	632,015
16 RADCO	124,500	121,800	118,674
17 Northern Neck	41,200	41,100	40,950
18 Middle Peninsula	62,400	61,200	59,987
19 Crater	161,600	162,800	161,959
20 Southeastern Virginia	870,200	862,900	843,504
21 Peninsula	356,900	350,800	344,342
22 Accomack-Northampton	45,400	45,500	45,893
MSA'S			
Bristol (Va. Portion)	91,100	90,600	90,597
Charlottesville	116,100	115,000	113,568
Danville	111,300	111,800	111,789
Lynchburg	154,300	154,000	153,260
Norfolk	1,201,400	1,187,000	1,160,311
Northern Virginia	1,164,300	1,140,700	1,105,714
Richmond	777,800	772,700	761,311
Roanoke	225,400	225,500	224,341
Total Counties	3,415,500	3,377,900	3,320,297
Total Cities	2,063,700	2,052,700	2,026,521
Total Metropolitan	3,841,700	3,797,200	3,720,891
Total Nonmetropolitan	1,637,500	1,633,400	1,625,927
State of Virginia	5,479,200	5,430,600	5,346,818

TABLE 3. COMPONENTS OF CHANGE FOR VIRGINIA LOCALITIES, 1980-1981 AND 1980-1982

Locality	1980-1982 (Provisional)				1980-1981			
	Total Change		Net Migration		Total Change		Net Migration	
	Numeric	Percent	Numeric	Percent	Numeric	Percent	Numeric	Percent
COUNTIES								
Accomack	-200	-0.7	-300	-0.9	-300	-0.9	-300	-0.9
Albemarle	1,700	3.0	800	1.3	800	1.4	300	0.5
Alleghany	-500	-3.6	-700	-4.6	-200	-1.0	-200	-1.7
Amelia	-200	-2.1	-200	-2.8	-100	-1.6	-200	-2.0
Amherst	0	-0.2	-300	-1.2	0	0.0	-200	-0.6
Appomattox	100	0.7	0	-0.2	0	0.3	0	-0.1
Arlington	300	0.2	-1,800	-1.2	300	0.2	-700	-0.5
Augusta	0	0.0	-500	-1.0	400	0.7	100	0.1
Bath	-600	-10.9	-600	-11.1	-500	-7.9	-500	-7.9
Bedford	1,300	3.8	900	2.6	800	2.3	600	1.7
Bland	100	1.8	100	0.9	200	2.5	100	2.0
Botetourt	200	1.0	100	0.5	400	1.5	300	1.2
Brunswick	0	0.3	0	-0.3	-100	-0.6	-100	-1.0
Buchanan	200	0.5	-500	-1.4	0	-0.1	-400	-1.1
Buckingham	-200	-1.9	-300	-2.6	0	0.1	0	-0.3
Campbell	400	0.9	-200	-0.5	300	0.6	-100	-0.2
Caroline	300	1.8	100	0.5	0	0.0	-100	-0.8
Carroll	600	2.3	600	2.0	100	0.3	0	0.1
Charles City	0	0.4	-100	-2.0	0	0.5	-100	-1.0
Charlotte	-300	-2.1	-300	-2.8	-200	-1.5	-200	-1.9
Chesterfield	10,900	7.7	7,300	5.2	7,300	5.2	5,400	3.8
Clarke	0	0.3	0	-0.1	-100	-0.7	-100	-0.9
Craig	0	-0.7	0	-0.5	-100	-2.0	-100	-2.1
Culpeper	100	0.6	-100	-0.6	200	0.8	0	0.0
Cumberland	-100	-0.9	-100	-1.4	0	0.1	0	-0.2
Dickenson	300	1.6	100	0.3	100	0.3	-100	-0.4
Dinwiddie	-600	-2.8	-800	-3.5	-200	-0.8	-300	-1.2
Essex	-100	-1.1	-200	-1.8	-100	-0.7	-100	-1.0
Fairfax	42,100	7.1	28,000	4.7	22,900	3.8	15,300	2.6
Fauquier	1,500	4.3	900	2.6	700	2.0	400	1.1
Floyd	200	1.6	100	0.9	300	2.5	200	2.0
Fluvanna	100	0.9	-100	-0.6	100	1.0	0	0.1
Franklin	200	0.6	-100	-0.2	200	0.6	0	0.1
Frederick	700	2.0	0	0.0	300	0.8	-100	-0.3
Giles	-100	-0.5	-200	-0.9	0	-0.1	-100	-0.3

Table 3, continued

Locality	1980-1982 (Provisional)				1980-1981			
	Total Change		Net Migration		Total Change		Net Migration	
	Numeric	Percent	Numeric	Percent	Numeric	Percent	Numeric	Percent
Gloucester	1,900	9.6	1,700	8.3	900	4.6	800	3.8
Goochland	400	3.0	200	2.0	100	1.1	100	0.7
Grayson	100	0.4	100	0.4	100	0.5	100	0.4
Greene	400	4.9	200	2.4	100	1.9	0	0.5
Greensville	-100	-1.0	-300	-2.3	100	0.6	0	0.0
Halifax	-700	-2.1	-900	-2.9	-300	-1.1	-500	-1.5
Hanover	800	1.5	200	0.3	700	1.4	400	0.8
Henrico	5,100	2.8	3,200	1.7	3,300	1.8	2,200	1.2
Henry	-1,200	-2.1	-1,900	-3.2	-600	-1.0	-900	-1.6
Highland	-300	-9.1	-300	-9.1	-200	-6.4	-200	-6.6
Isle of Wight	500	2.2	200	1.0	400	1.7	200	1.1
James City	1,500	6.6	1,100	5.0	900	4.0	700	3.2
King and Queen	-100	-2.0	-100	-2.0	0	-0.6	0	-0.7
King George	200	1.6	0	-0.1	100	1.0	0	0.0
King William	300	2.9	200	1.7	200	2.1	100	1.5
Lancaster	200	2.0	300	2.7	0	0.4	100	0.9
Lee	400	1.6	300	1.0	200	0.8	100	0.4
Loudoun	1,800	3.0	400	0.7	1,000	1.7	200	0.4
Louisa	400	2.2	200	1.2	100	0.7	0	0.2
Lunenburg	0	0.1	0	-0.3	100	0.8	100	0.6
Madison	-100	-1.1	-200	-2.1	-100	-0.5	-100	-1.1
Mathews	300	3.5	300	4.3	100	1.6	200	2.0
Mecklenburg	-400	-1.3	-500	-1.7	-400	-1.3	-500	-1.5
Middlesex	100	1.7	200	2.3	100	0.9	100	1.3
Montgomery	1,200	1.9	400	0.6	900	1.4	400	0.7
Nelson	100	1.1	100	0.6	100	0.6	0	0.2
New Kent	400	4.8	300	3.2	200	2.2	100	1.2
Northampton	-300	-1.9	-300	-2.2	-200	-1.1	-200	-1.4
Northumberland	100	0.6	100	1.1	100	0.8	100	1.1
Nottoway	-200	-1.6	-300	-1.8	-200	-1.1	-200	-1.1
Orange	500	2.6	300	1.6	100	0.7	0	0.2
Page	-100	-0.3	-200	-0.9	-100	-0.5	-200	-0.9
Patrick	-200	-1.1	-300	-1.5	-100	-0.8	-200	-1.0
Pittsylvnia	300	0.5	-400	-0.7	200	0.4	-200	-0.2
Powhatan	100	0.6	-100	-0.7	0	0.0	-100	-0.7
Prince Edward	300	1.6	200	1.1	300	1.8	200	1.5
Prince George	200	0.6	-500	-1.9	1,000	3.7	600	2.3
Prince William	12,000	8.3	6,200	4.3	7,600	5.2	4,500	3.1
Pulaski	100	0.2	-200	-0.5	0	0.1	-100	-0.3
Rappahannock	-200	-2.9	-200	-3.5	-100	-1.8	-100	-2.2

Table 3, continued

Locality	1980-1982 (Provisional)				1980-1981			
	Total Change		Net Migration		Total Change		Net Migration	
	Numeric	Percent	Numeric	Percent	Numeric	Percent	Numeric	Percent
Richmond	0	0.1	0	-0.2	0	-0.7	-100	-0.8
Roanoke	800	1.1	200	0.3	1,000	1.4	600	0.9
Rockbridge	100	0.6	0	-0.2	100	0.3	0	-0.1
Rockingham	900	1.7	0	0.0	900	1.7	400	0.7
Russell	600	1.9	200	0.7	200	0.7	0	0.0
Scott	300	1.3	200	0.9	-100	-0.3	-100	-0.5
Shenandoah	100	0.5	0	0.0	100	0.4	0	0.1
Smyth	-100	-0.4	-300	-1.0	100	0.2	-100	-0.2
Southampton	-100	-0.7	-300	-1.4	-100	-0.7	-200	-1.1
Spotsylvania	1,600	4.8	800	2.3	1,200	3.5	800	2.2
Stafford	3,400	8.5	2,500	6.3	1,600	4.0	1,100	2.8
Surry	100	1.3	0	0.0	0	0.6	0	0.0
Sussex	-300	-3.1	-400	-3.8	-200	-1.9	-200	-2.3
Tazewell	1,000	2.1	400	0.8	500	1.1	200	0.4
Warren	200	1.1	0	0.0	300	1.3	100	0.6
Washington	500	1.0	200	0.4	400	0.9	300	0.6
Westmoreland	0	0.0	-100	-0.4	0	0.3	0	0.1
Wise	600	1.4	-200	-0.4	200	0.3	-300	-0.7
Wythe	100	0.4	0	-0.1	100	0.5	100	0.3
York	1,400	3.9	1,100	3.1	900	2.6	800	2.2
CITIES								
Alexandria	1,100	1.0	-400	-0.4	1,900	1.9	1,100	1.1
Bedford	300	4.6	400	6.2	200	3.5	300	4.4
Bristol	-300	-1.5	-300	-1.4	-300	-1.8	-300	-1.7
Buena Vista	-200	-2.4	-200	-2.9	-100	-2.0	-200	-2.3
Charlottesvile	400	1.0	0	0.0	400	0.9	200	0.4
Chesapeake	5,300	4.6	2,700	2.3	2,400	2.1	1,000	0.9
Clifton Forge	-300	-5.0	-200	-3.9	-100	-2.6	-100	-2.0
Colonial Heights	600	3.7	500	2.9	300	1.9	200	1.5
Covington	-700	-7.4	-700	-7.3	-400	-4.1	-400	-4.1
Danville	-800	-1.8	-900	-1.9	-300	-0.6	-300	-0.7
Emporia	100	1.7	100	1.5	100	2.3	100	2.2
Fairfax	-100	-0.5	-600	-2.9	100	0.6	-100	-0.7
Falls Church	-200	-1.7	-200	-2.6	0	-0.1	-100	-0.6
Franklin	-400	-4.9	-500	-6.2	-200	-2.9	-300	-3.7
Fredericksburg	200	1.3	200	1.0	200	1.2	200	1.0

Table 3, continued

Locality	1980-1982 (Provisional)				1980-1981			
	Total Change		Net Migration		Total Change		Net Migration	
	Numeric	Percent	Numeric	Percent	Numeric	Percent	Numeric	Percent
Galax	0	-0.5	0	-0.2	100	1.4	100	1.5
Hampton	2,300	1.9	-500	-0.4	1,100	0.9	-500	-0.4
Harrisonburg	600	2.5	500	2.1	600	2.3	500	2.0
Hopewell	600	2.4	100	0.5	400	1.6	100	0.5
Lexington	-200	-2.8	-200	-2.2	-200	-2.6	-200	-2.3
Lynchburg	600	0.9	200	0.4	400	0.7	200	0.4
Manassas	1,700	10.8	1,000	6.7	1,100	7.4	800	5.1
Manassas Park	100	1.2	-100	-2.1	0	-0.5	-100	-2.3
Martinsville	0	-0.1	-100	-0.5	0	0.2	0	0.2
Newport News	6,300	4.4	2,400	1.6	2,900	2.0	800	0.6
Norfolk	-100	0.0	-6,500	-2.4	6,100	2.3	2,700	1.0
Norton	-100	-2.7	-200	-3.2	-100	-3.1	-200	-3.4
Petersburg	-800	-2.0	-1,300	-3.1	-600	-1.5	-900	-2.2
Poquoson	700	8.6	600	6.9	400	4.7	300	3.9
Portsmouth	1,200	1.2	-900	-0.8	-200	-0.2	-1,300	-1.3
Radford	-300	-2.3	-300	-2.4	0	0.1	0	0.0
Richmond	-1,000	-0.4	-2,800	-1.3	-1,100	-0.5	-2,000	-0.9
Roanoke	0	0.0	-400	-0.4	-100	-0.1	-300	-0.3
Salem	0	0.2	0	-0.2	0	-0.2	-100	-0.4
South Boston	0	0.0	0	-0.1	0	-0.3	0	-0.3
Staunton	200	0.8	200	0.7	0	0.0	0	0.0
Suffolk	-100	-0.2	-600	-1.2	-400	-0.8	-600	-1.3
Virginia Beach	20,400	7.8	12,700	4.9	11,400	4.4	7,300	2.8
Waynesboro	-200	-1.3	-300	-2.2	-100	-0.6	-200	-1.1
Williamsburg	200	2.0	100	0.8	300	2.5	200	2.0
Winchester	100	0.3	0	0.1	100	0.5	100	0.4

Table 3, continued

Locality	1980-1982 (Provisional)				1980-1981			
	Total Change		Net Migration		Total Change		Net Migration	
	Numeric	Percent	Numeric	Percent	Numeric	Percent	Numeric	Percent
PLANNING DISTRICTS								
1 LENOWISCO	1,200	1.2	200	0.2	100	0.1	-500	-0.5
2 Cumberland Plateau	2,100	1.5	100	0.1	800	0.6	-300	-0.2
3 Mount Rogers	1,000	0.5	200	0.1	700	0.4	300	0.2
4 New River Valley	1,100	0.7	-200	-0.2	1,200	0.9	500	0.4
5 Fifth	-400	-0.2	-1,600	-0.6	500	0.2	-200	-0.1
6 Central Shenandoah	300	0.2	-1,500	-0.7	800	0.4	-200	-0.1
7 Lord Fairfax	1,100	0.8	-200	-0.1	600	0.4	-200	-0.1
8 Northern Virginia	58,600	5.3	32,500	2.9	34,900	3.2	20,900	1.9
9 Rappahannock-Rapidan	1,900	2.0	600	0.7	900	0.9	200	0.2
10 Thomas Jefferson	3,000	2.1	1,200	0.8	1,600	1.1	500	0.4
11 Central Virginia	2,600	1.4	1,000	0.5	1,800	0.9	800	0.4
12 West Piedmont	-1,800	-0.7	-3,600	-1.5	-500	-0.2	-1,500	-0.6
13 Southside	-1,000	-1.2	-1,400	-1.7	-800	-1.0	-1,100	-1.3
14 Piedmont	-700	-0.8	-1,100	-1.3	-100	-0.1	-300	-0.4
15 Richmond Regional	16,600	2.6	8,100	1.3	10,600	1.7	5,900	0.9
16 RADCO	5,800	4.9	3,600	3.0	3,100	2.6	1,900	1.6
17 Northern Neck	300	0.6	300	0.8	100	0.3	200	0.4
18 Middle Peninsula	2,400	4.0	2,100	3.4	1,200	2.0	1,000	1.7
19 Crater	-400	-0.2	-2,600	-1.6	800	0.5	-400	-0.2
20 Southeastern Virginia	26,700	3.2	7,000	0.8	19,400	2.3	8,800	1.0
21 Peninsula	12,500	3.6	4,900	1.4	6,400	1.9	2,400	0.7
22 Accomack-Northampton	-500	-1.1	-600	-1.3	-400	-1.0	-500	-1.1
MSA'S								
Bristol (Va. Portion)	500	0.6	200	0.2	0	0.0	-200	-0.2
Charlottesville	2,500	2.2	900	0.8	1,400	1.2	500	0.4
Danville	-500	-0.5	-1,300	-1.2	0	0.0	-500	-0.4
Lynchburg	1,000	0.7	-300	-0.2	800	0.5	0	0.0
Norfolk	41,100	3.5	14,000	1.2	26,700	2.3	12,200	1.1
Northern Virginia	58,600	5.3	32,500	2.9	34,900	3.2	20,900	1.9
Richmond	16,500	2.2	6,200	0.8	11,400	1.5	5,700	0.7
Roanoke	1,000	0.5	-100	0.0	1,200	0.5	500	0.2
Total Counties	95,200	2.9	45,100	1.4	57,600	1.7	30,100	0.9
Total Cities	37,200	1.8	3,700	0.2	26,200	1.3	8,200	0.4
Total Metropolitan	120,800	3.2	51,900	1.4	76,300	2.1	39,100	1.1
Total Nonmetropolitan	11,600	0.7	-3,100	-0.2	7,400	0.5	-800	0.0
State of Virginia	132,400	2.5	48,800	0.9	83,800	1.6	38,300	0.7

APPENDIX A. VIRGINIA METROPOLITAN STATISTICAL AREAS

Charlottesville
- Albemarle County
- Fluvanna County
- Greene County
- Charlottesville City*

Danville
- Pittsylvania County
- Danville City*

Johnson City-Kingsport-Bristol, (Virginia portion)
- Scott County
- Washington County
- Bristol City*

Lynchburg
- Amherst County
- Campbell County
- Lynchburg City*

*Central city

Norfolk-Virginia Beach-Newport News
- Gloucester County
- James City County
- York County
- Chesapeake City
- Hampton City*
- Newport News City*
- Norfolk City*
- Poquoson City
- Portsmouth City*
- Suffolk City*
- Virginia Beach City*
- Williamsburg City

Roanoke
- Botetourt County
- Roanoke County
- Roanoke City*
- Salem City

Washington, D.C. (Virginia portion)
- Arlington County*
- Fairfax County
- Loudoun County
- Prince William County
- Stafford County
- Alexandria City
- Fairfax City
- Falls Church City
- Manassas City
- Manassas Park City

APPENDIX B. METHODOLOGY

The estimates presented in this publication are an average of those produced by two separate methods, ratio-correlation and administrative records. This appendix contains brief descriptions of the input data used, each of the methods, the procedure used in averaging the results, and the difference between final and provisional estimates.

Input data

Input data for each jurisdiction include:

1. The number of federal tax returns filed in the estimating year. These data are obtained from the Bureau of the Census, and are not available for release.

2. The number of state tax returns filed in the estimating year, obtained from the Virginia Department of Taxation.

3. Births and deaths by race in the estimating year, obtained from the Virginia Department of Health.

4. The sum of public and nonpublic school enrollment in grades 1-8 in October of the year preceding the estimating year. Public school figures are obtained from the report entitled "Fall Membership in Virginia's Public Schools," issued annually by the Virginia Department of Education. Nonpublic school figures are obtained from Tayloe Murphy Institute's annual survey of these institutions, and are on the basis of residence. These figures are available for release only on the aggregate level, and only where the number of schools drawing students from an area is sufficiently large so that no school's enrollment figures can be derived.

5. Medicare enrollment for the estimating year. The 1980 Census indicated that in many counties adjacent to or surrounding independent cities, this data series contained errors traceable to address coding. Consequently, data for these areas are adjusted to compensate for these errors. Medicare data are obtained from the Bureau of the Census, which in turn obtains the series from the Social Security Administration. The data are administratively restricted and cannot be released.

6. The number of persons resident in military barracks and on non-deployed ships. These data are obtained from the Bureau of the Census, which in turn receives them from the Department of Defense. By special permission of the Department of Defense, they are available for release only to local and planning district staff and officials.

7. The number of persons permanently or quasi-permanently resident in institutions with populations of approximately 50 or more. These data are obtained from a variety of sources, including the Virginia Department of Corrections, the Virginia Department of Mental Health, and the institutions themselves. Included are long-term health care facilities, long-term correctional institutions, and residents of college and university dormitories. Nursing homes are not included

because their residents are usually represented by other data, particularly Medicare enrollment.

The Tayloe Murphy Institute is currently petitioning a number of agencies for permission to release restricted data. It is hoped that in the future only the school-by-school nonpublic enrollment figures will be restricted.

The Ratio-Correlation Method

The ratio-correlation method uses a prediction equation generated by regression analysis, a statistical technique which measures the relationship between one or more indicator variables and a dependent variable. For use in estimating the population, a new equation is generated once every ten years, using Census population as the dependent variable. This equation takes the form

$$\text{Estimated } Y = \pm b1(X1) \pm \ldots \pm bn(Xn) \pm C$$

where each b is a regression coefficient, each X is an indicator variable, C is the constant, and Estimated Y is the dependent variable. For Virginia, the current coefficients and indicator variables are:

Variable	Coefficient
Federal tax returns filed in the estimating year	0.051
State tax returns filed in the estimating year	0.278
Births by residence in the estimating year and the two	0.117
Public and nonpublic school enrollment in grades 1-8 in the October preceding the estimating year	0.413
Constant	0.127

These variables are used in the equation in a double ratio form, in which each locality's share of the state total in the estimating year is compared to its share of the state total in the base year (the year in which the equation was developed). For example, in producing an estimate for 1982, the form of the state tax return indicator is

$$\frac{\text{(Tax returns for the locality, 1982)}}{\text{(Tax returns for the state, 1982)}} \Big/ \frac{\text{(Tax returns for the locality, 1980)}}{\text{(Tax returns for the state, 1980)}}$$

After multiplying each of these double ratios by its coefficient and adding the constant, mathematical adjustments are made to allow for the time elapsed between the base year and the estimating year. The resulting estimate is not a population figure; rather it is the percentage of the state's total noninstitutional population that will be allocated to the locality. These percentages are adjusted to equal 100.0, and the adjusted percentage is multiplied by the state total. The final step is to add institutional populations to obtain an estimate of the total population.

It is important to realize that ratio-correlation does not involve a one-to-one correspondence between each indicator variable and the population estimate. That is, a coefficient of 0.415 in no sense indicates that for every student in grades 1-8, 0.415 of a person will be added to the estimate. Similarly, although it may seem that each person in the institutional population constitutes one person in the estimate, this is not the case. Because the equation is derived using the base year noninstitutional population, the amount of change in the institutional population between the base and estimating years is actually more important than the numbers themselves.

The Administrative Records Method

The administrative records method uses births and deaths by race to estimate natural increase between 1980 and the estimating year for each locality. A matrix of federal tax return data is then used to estimate net migration, and together these elements produce an estimate of the non-group quarters population under the age of 65. Adjusted Medicare enrollment is then used to estimate the population 65 and over, and institutional and barracks populations are added to produce a total population estimate. Since the federal tax return data used in producing the net migration estimates are confidential, this method is calculated at the Bureau of the Census.

The Sumest Procedure

The sumest procedure is the procedure that averages and adjusts the ratio-correlation and administrative records estimates. In this procedure, the administrative records estimates are adjusted to equal the state estimate produced independently by the Bureau of the Census. (This adjustment is not needed for ratio-correlation, since adjusting the percentages to equal 100.0 has already performed this function.) The results of each method are then further adjusted for any special censuses that have taken place. The two estimates are then averaged, and if necessary, a very small adjustment is performed to adjust one final time to the state total.

Provisional vs. Final Estimates

The differences between the provisional and final estimates for a given year are produced by differences in the input data and the state total. Normally, at the time the estimates are being generated, final figures for births, deaths, Medicare enrollment, and nonpublic school enrollment are not available for the provisional estimate. Therefore, these quantities must themselves be estimated. For similar reasons, the Bureau of the Census produces a state estimate that will be revised a year later. Consequently, although the provisional estimates are more timely than the final estimates, they are also somewhat less accurate.